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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/486,012	05/15/2000	SIMON J. FENNEY	R&GCASE305	3729

7590 07/17/2003
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EXAMINER

CAO, HUEDUNG X

ART UNIT	PAPER NUMBER
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2671

DATE MAILED: 07/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/486,012

Applicant(s)

FENNEY, SIMON J.

Examiner

Huedung X Cao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 37-39 is/are allowed.
- 6) ☒ Claim(s) 20-36 is/are rejected.
- 7) ☒ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 20-26, and 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasawa (US 6,061,065) in view of Hurley et al. (US6552726 B2).

As per claim 20, and a similar claim 29, Nagasawa teaches a method for shading a three dimensional textured computer graphic image comprising the steps of:

providing data defining the three dimensional computer graphic image, the image comprising a set of pixels (Nagasawa, col. 2, lines 26-29);

providing data defining at least one light source and its direction illuminating the image wherein the light source is defined in the same local coordinate system (Nagasawa, col. 4, lines 25-44);

for each pixel in the image, deriving a shading value to be applied to that pixel from the surface normal vector assigned to the pixel and the light source data which Nagasawa does not explicitly disclose. However, Nagasawa's surface shade becomes manifest when the reflection of the scattered light is increased implies the step of

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deriving a shading value as claimed (Nagasawa, col. 5, lines 41-42) . Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to derive a shading value to be applied to that pixel in order to render the surfaces in the graphics display image of a three dimensional object by taking into account surface characteristics and position with respect to light sources.

providing a set of surface normal vectors corresponding to the texture data for the image wherein the surface normal vectors are stored in a local coordinate system (Nagasawa, col. 6, lines 28-30), and an individual surface normal vector from the set of surface normal vectors is assigned to each pixel (Nagasawa, col. 1, lines 62-65; col. 4, lines 10-13); furthermore, Hurley teaches that providing an individual surface normal vector from the set of surfaces normal vectors is assigned to each pixel is widely used in the art (Hurley, col. 1, lines 59-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made, in view of teaching of Hurley, to configure Nagasawa's method as claimed by interpolating an individual surface normal vector is assigned to each pixel in order to increase sophistication, flat shading in advanced graphic feature.

As per claim 21, and a similar claim 30, in which the surface normal vectors are stored in polar coordinates (Nagasawa, col. 1, line 66-col. 2, line 7)).

As per claim 22, and a similar claim 31, in which the light source data is stored in polar coordinates (Nagasawa, col. 6, line 20-col. 7, line 24).

As per claim 23, in which the step of deriving a shading value to be applied to a pixel comprises deriving a color value and a blending value the surface normal vector

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assigned to the pixel and from the light source data and combining this color value with existing color data from that pixel in dependence on the blending value (Nagasawa, col. 6, lines 20-27).

As per claim 24, and a similar claim 32, in which the surface normal vectors are stored in Cartesian coordinates (Nagasawa, col. 7, lines 10-24).

As per claim 25, and a similar claim 33, in which the light source data are stored in Cartesian coordinates (Nagasawa, col. 6, lines 5-27).

As per claim 26, and a similar claim 34, in which for each surface normal vector only two of the Cartesian coordinates are stored (Nagasawa, col. 7, lines 10-24).

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 27, and 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasawa (US 6,061,065) in view of Shirman et al. (US #6151029).

As per claim 27, and a similar claim 35, applying a linear filter to the texture data at least once to map values to individual pixels (Shirman, col.2, lines 4-17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a filter to the texture in order to improve the effect of texture mapping onto objects.

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5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 28, and 36, rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasawa (US 6,061,065) in view of Shirman et al. (US #6151029) and further in view of Gholizadeh et al. (US #5369737).

As per claim 28, and a similar claim 36, applying a glossiness parameter to a pixel (Gholizadeh, col. 7, lines 17-31). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a glossiness to the pixels in order to improve the effect of texture mapping onto objects.

Allowable Subject Matter

7. Claims 37-39 are allowed.

The following is an examiner's statement of reasons for allowance: the prior art does not teach the method of shading a three dimensional graphics textured image comprising the steps of: determining whether or not the basic computer image is to be subjected to supplemental shading; if the basic computer image is to be subjected to supplemental shading; if the basic computer image is not to be subjected to supplemental shading, designating the existing color value as the final color value.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

8. Applicant's arguments filed 03/05/03 have been fully considered but they are not persuasive.

Applicant argues that Nagasawa does not suggest the step of providing shading value for an image forming pixel which is not correct. Nagasawa teaches that when the reflection coefficient of the light is increased the surface shade becomes manifest which provide the shading value in column 5, lines 39-40.

Nagasawa suggests the method of texturing an image in his texture mapping (col. 6, lines 28-30).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Inquires

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Huedung Cao** whose telephone number is

(703) 308-5024.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Mark Zimmerman**, can be reached at **(703) 305-9798.**

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231


or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 305-0377.

Huedung Cao
Patent Examiner


MARK ZIMMERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600